Claims 27-57 are presently pending in this application, with claim 27 being independent.

The original claims filed in the parent PCT application (i.e., International Application No. PCT/NO99/00141 or International Publication No. WO 99/58564) were cancelled during international prosecution without prejudice to or disclaimer of their subject matter, and were replaced with claims 1-26 by way of an amendment made pursuant to Article 19 of the Patent Cooperation Treaty. Claims 1-26 now have also been cancelled without prejudice to or disclaimer of the subject matter recited therein. During international preliminary examination, further claim amendments were proposed pursuant to Article 34 of the Patent Cooperation Treaty. These further amendments can be found in an annex to the International Preliminary Examination Report. A copy of the Report with its annex has been filed herewith. Newly added claims 27-57 introduce the Article 34 claim amendments into the U.S. national phase application. However, the Article 34 claim amendments have been rewritten as claims 27-57 in order to place them in better form under U.S. patent practice. Some of the claims also have been rewritten to reduce the overall number of multiple dependent claims in the application.

Applicants also have made one small amendment in the specification in order to correct an obvious typographical error. Support for the amendment made to the specification can be found,

for example, at page 19, lines 5-10, wherein the proper term, i.e., "Exon 2" is referred to in connection with the genetic sequence in question.

Applicants submit that no new matter has been added by these amendments, and request favorable consideration and early examination of this application on its merits.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,

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AMENDED CLAIMS

[received by the International Bureau on 1st December 1999 (01.12.99);
original claims 1-25 replaced by amended claims 1-26 (5 pages)]

1. A peptide characterised in that it

a) is at least 8 amino acids long and is a fragment of a mutant βAPP and/or Ubi-B protein arising from a frameshift mutation associated with Alzheimer's disease and/or Down syndrome;

and

b) consists of at least one amino acid of the mutant part of the mutant βAPP and/or Ubi-B protein;

and

c) comprises 0-10 amino acids corresponding to the carboxyl terminus of the normal part of the protein sequence preceding the amino terminus of the mutant sequence and may further extend to the carboxyl terminus of the mutant part of the protein as determined by a new stop codon generated by the relevant frameshift mutation;

and

d) induces, either in its full length or after processing by antigen presenting cells, T cell responses.

2. A peptide according to claim 1 characterised in that it contain 8-23 amino acids.

3. A peptide according to claim 1 characterised in that it contain 9-21 amino acids.

ARTICLE 19 Amdt

4. A peptide according to claim 1 characterised in that it contain 9-16 amino acids.

5. A peptide according to claim 1 characterised in that it contain 8-12 amino acids.

6. A peptide according to claim 1 characterised in that it contain 20-25 amino acids.

7. A peptide according to claim 1 characterised in that it contains 9 amino acids.

8. A peptide according to claim 1 characterised in that it contains 12 amino acids.

9. A peptide according to claim 1 characterised in that it contains 13 amino acids.

10. A peptide according to claim 1 characterised in that it is selected from a group of peptides having the following sequence identity numbers:
seq id no. 1 - seq id no. 10 or a fragment of any of these.

ARTICLE 19 Amd'T

11. A peptide for use in treatment of Alzheimer's disease or Down's syndrome,
said peptide c h a r a c t h e r i s e d in that it

a) is at least 8 amino acids long and is a fragment of a mutant βAPP and/or Ubi-B protein arising from a frameshift mutation associated with Alzheimer's disease and/or Down syndrome;

and

b) consists of at least one amino acid of the mutant part of the mutant βAPP and/or Ubi-B protein;

and

c) comprises 0-10 amino acids corresponding to the carboxyl terminus of the normal part of the protein sequence preceding the amino terminus of the mutant sequence and may further extend to the carboxyl terminus of the mutant part of the protein as determined by a new stop codon generated by the relevant frameshift mutation;

and

d) induces, either in its full length or after processing by antigen presenting cells, T cell responses.

12. A pharmaceutical composition comprising a peptide according to any of the above claims and a pharmaceutically acceptable carrier or diluent.

13. A vaccine for Alzheimer's disease comprising a peptide according to any of the claims 1-10 and a pharmaceutically acceptable carrier or diluent.

14. Use of a peptide according to any of the claims 1-10 for the preparation of a pharmaceutical composition for treatment or prophylaxis of Alzheimer's disease or treatment of Down syndrome.

15. Method for vaccination of a person disposed for or afflicted with Alzheimer's disease, consisting of administering at least one peptide according to the claims 1-10, one or more times, in an amount sufficient for induction of specific T-cell immunity to mutant βAPP and/or mutant Ubi-B peptides associated with Alzheimer's disease and/or Down syndrome.

16. Method according to claim 15 wherein the amount of the peptides is in the range of 1 microgram (1 μg) to 1 gram (1g) and preferentially in the rage of 1 microgram (1 μg) to 1 milligram (1 mg) for each administration.

17. Method for treatment of a patient afflicted with Alzheimer's disease or Down syndrome, by stimulating *in vivo* or ex *vivo* with peptides according to the claims 1-10.

18. Method according to claim 17 wherein the amount of the peptides used is in the range of 1 microgram (1 μg) to 1 gram (1g) and preferentially in the rage of 1 microgram (1 μg) to 1 milligram (1 mg) for each administration.

19. An isolated DNA sequence comprising a DNA sequence or variants thereof encoding a frameshift mutant peptide according to claim 1.

20. An isolated DNA sequence according to claim 19 encoding peptides comprising seq. id. no: 1-10 or variants thereof.

21. Use of a DNA sequence according to any of the claims 19-20 for the preparation of a pharmaceutical composition for treatment or prophylaxis of Alzheimer's disease or treatment of Down syndrome.

22. Method for treatment of a person disposed for or afflicted with Alzheimer's disease or afflicted with Down syndrome, by stimulating *in vivo* or *ex vivo* with DNA sequences according to the claims 19-20.

23. A plasmid or virus vector comprising DNA sequences of claim 18 encoding a frameshift mutant βAPP peptide and/or Ubi-B peptide associated with Alzheimer's disease or Down syndrome.

24. A vector according to claim 23 wherein the vector is *E.Coli* plasmid, a Listeria vector and recombinant viral vectors. Recombinant viral vectors include, but are not limited to orthopox virus, canary virus, capripox virus, suipox virus, vaccinia, baculovirus, human adenovirus, SV40 or bovine papilloma virus.

25. Use of a plasmid or virus vector according to claim 23 for the preparation of a pharmaceutical composition for treatment or prophylaxis of Alzheimer's disease or treatment of Down syndrome.

26. Method for treatment of a person disposed for or afflicted with Alzheimer's disease or afflicted with Down syndrome, by stimulating *in vivo* or *ex vivo* with plasmids or virus vectors according to claim 23.